REMARKS

Claims 1, 9, 13, 19 and 21-36 are pending. The amendment to claim 1 is to delete subject matter for clarity. No new matter is entered in the claims.

Claims 1, 9, 13, 19 and 21-36 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. (Office Action, Page 2)

The phrase in claim 1 "about 85% or more of which" has been deleted making this rejection now moot.

Claims 1, 9, 13, 19 and 21-36 are rejected under 35 U.S.C. 103(a) as being obvious over Minoda (JP 2002-302795; which is cited by Applicant on PTOL-1449). (Office Action, Page 4)

As will be explained herein, along with direct comparative data over Minoda a detailed Inventor's Declaration and a verified translation of Minoda, the claimed invention structurally different and is not obvious in light of the cited art.

According to claim 1, the diameter of the pores of the anodic oxidation coating made in the aluminum material is limited to the range of 25 nm – about 90 nm, and the depth of the pores is limited to the range of about 1 μm – 1.5 μm.

Whereas, the Minoda invention discloses or teaches:

(a) that in order to obtain an excellent anchor effect of the synthetic resin, it is inevitable to form not only the hole 4 on the porous layer 3, but also a fine pore 5 within the hole 4;

(b) that in order to achieve the above-mentioned purpose (a) a 1st oxidizing treatment and a 2nd oxidizing treatment are required; and

(c) that in order to achieve the above-mentioned purpose, it is necessary to limit the open diameter W of the holes 4 to the range of 200 nm-- 600 nm formed in the anodic oxide film 2 having the thickness t of 30nm-400nm made in the aluminum material and limit the diameter V of the fine pores 5 to the range of 50 -200 nm and the depth of the fine pores 5 is limited to the range of 10-50nm. (Please see claim 1, claim 2, claim 3, paragraphs 0009, 0010, 0013, 0014, 0016, 0017, 0018, 0019, 0020, 0021 of the JP' 795).

As clear from the above, the ***structure of the anodic oxidation coating of claim 1***

invention is different from that of the anodic oxide film disclose in JP' 795.

Especially, please note that the reason for limiting the open width W of the holes 4 is described in paragraph [0018] as follows:

> [0018] ...If the open diameter W of the holes 4 is less than 200 nm, a laminating synthetic resin material such as a resin film, or the like fluidizing at the time of thermal adhesion is difficult to flow into the holes 4 and the fine pores 5 made inside the holes, and as a result, it becomes difficult to exhibit a sufficient anchor effect, and if the open diameter W exceeds 600 nm, the laminating synthetic resin material flowing at the time of thermal fusion flows easily into the holes 4 and the fine pores 5 made inside the holes, but the laminating resin material after solidification thereof becomes easy to detach from the holes and it happens that it becomes difficult to exhibit the sufficient anchor effect....

The above mentioned experimental limitation does not suggest or teach that the diameter of the ***pores is limited to the range of 25 nm--about 90 nm as recited in claim 1.***

Further, in [0019], it is described to that effect that the fine pores 5 are the characteristic portion of the invention and the open diameter V thereof is 50 nm —200 nm and the depth D thereof is 10 nm--50 nm. Further, in [0020], reason for limiting the open diameter V of the fine pores 5 is described as follows:

> [0019] ...If the open diameter V is less than 50 nm, such a flowing lamination synthetic resin material as a resin film or the like at the time of thermal fusion is difficult to flow into the fine pores 5 and intruded therein, and as a result, it becomes difficult to exhibit a sufficient anchor effect, and if the open diameter V exceeds 200 nm, the lamination synthetic resin material fluidizing at the time of thermal adhesion flows easily into the fine pores 5, but the lamination resin material after solidification thereof becomes easy to be detached from the fine pores and it happens that it becomes difficult to exhibit the sufficient anchor effect. The depth d of the fine pores 5 has relations with the thickness of the bottom 4a or the side surface 4b of the holes 4 constituting the porous layer 3, and a preferable anchor effect can be exhibited by the depth d of the foregoing range....

Thus, according to the Minoda invention disclosed in JP' 795, ***it is essential to form the fine pores 5 within the holes 4 for obtaining an excellent anchor effect.***

Whereas, according to present c***laim 1, it is not necessary to form such fine pores within the pores***, and an excellent anchor effect can be obtained by the fine pores alone having the diameter of 25 nm--about 90 nm and the depth of about 1 g m gm as recited in claim 1.

Thus, the structure of the anodic oxidation coating is different from that of the anodic oxide film disclosed in JP' 795.

In addition, the vertical and horizontal tensile strengths of the component having the above—defined fine pores formed in the anodic oxidation coating as recited in the anodic oxidation coating in claim 1 are superior to those of the component having the above-defined holes 4 and the above-defined fine pores 5 within the holes 4 as recited in claims 1 and 2 of JP' 795 as explained by the enclosed inventor's Declaration. (see p.5 and 8 of the Declaration which summarize the comparative results.) The Declaration alone, comparing Minoda and the clamed invention, proves the structural differences, thus making a *prima facie* obviousness rejection fail.

Further additional differences, among others, between the claim 1 invention and Minoda invention are as follows:

Forming the pores formed on the surface of the aluminum material according to claim 1 invention can be obtained at a single step of the oxidizing treatment. Whereas, according to Minoda, forming the holes 4 and the fine pores 5 within the holes 4 requires two steps: of the 1st oxidizing treatment and the 2nd oxidizing treatment. Thus, the manufacturing process of making the anodic oxidation coating according to present claim 1, is easier than that of the anodic oxide film, that is, the anodic oxidation coating according to Minoda.

The diameter of the pores is in the range of 25 nm --90 nm of the anodic oxidation coating according to the claim 1 invention, which is clearly out of the range of 200 nm —600 nm which is the open diameter W of the holes 4.

It is incorrect to compare the diameter of the pores formed on the anodic oxidation coating as recited in claim 1 with the open diameter V in the range of 50 nm --200 nm of the fine pores 5 of JP' 795, because the pores correspond to the holes 4, but the oxidation coating

according to the present claim 1 lack the fine pores 3 which are essential for Minoda invention.

In addition, in view of the reasons for limiting the diameter V of the fine pores 3 to the range of 50 nm to 200 nm as set forth in [0019] and [0020] disclosed in JP' 795, the Minoda is characterized in that ***the fine pore 3 is formed inside the hole 4 and the combination of limitation of the diameter V to the above-mentioned range of the fine pores 3 with limitation of the diameter W of the holes 4 to the above-mentioned range can bring about an excellent anchor effect.***

This means that the invention disclosed in JP' 795 rather discloses or teaches that the holes alone made on the anodic oxide film can not obtain an excellent anchor effect or a strong tensile strength of the synthetic resin film intruded therein. However, on the contrary, according to the claimed invention, the fine pores alone having the above-mentioned limited diameter and the depth as recited in claim 1 are formed on the anodic oxidation coating.

As clear from the various reasons above and the comparative data over Minoda in the enclosed Declaration, that the invention now claimed is structurally different from the cited art. It is therefore respectfully requested that the rejection be reconsidered and withdrawn.

Claims 1, 9, 13, 19 and 21-36 are rejected under 35 U.S.C. 103(a) as being obvious over Iwasaki et al. (US 2002/0109134) in view of Minoda (JP 2002-302795; which is cited by Applicant on PTOL-1449). (Office Action, Page 7)

The combination of references cannot make obvious the invention now claimed for several reasons, including:

(1) On page 7, point 14 of the Office Action, in the first place, Iwasaki et al. discloses a nano-structure having a plurality of kinds of pores, but does not disclose the ***composite*** comprising the anodic oxidation coating of aluminum material and the synthetic resin film intruded in the pores of the anodic oxidation coating as recited in claim 1. The rejection alleges on p.7, point 14 of the Office Action that "lwasaki et al. discloses all claimed structural limitations..." However lwasaki primarily concerns the nanostructure of porous aluminum and ***not a composite material.***

(2) More in detail, plural kinds of pores are at least two kinds of pores 3 and 5 having

different diameters, and pores 5 have a smaller diameter than that of the pores 3, and further the pores 5 and pores 3 are regularly formed at predetermined positions in the anodic porous alumina.

Thus, the structure of the anodic oxidation coating of the invention as recited in claim 1 is clearly structurally different from that of the nanostructure disclosed in Iwasaki et al.

(3) In addition, according to Iwasaki, as described in Examples 1,2 and 4 quoted by the rejection, those regular pores of the nano—structure are made at three steps comprising:

a) preparation of work piece,

b) forming pore starting points, and

c) forming pores to prepare various nanostructures as shown in FIGS.3A-3C, FIG.5, FIG.2C, 3A— 3C, etc. and further, as an additional step,

d), in Example 5 and as shown in FIG. 6, a filler 6 such as Ni metal as a magnetic material is filled in the pores 3 and 5 to prepare a nano—structure.

Thus, there is neither description of filling a fused synthetic resin in the pores, nor description of applying a fused synthetic resin to the surface of the anodic porous alumina. Thus, the critical component for obtaining a strong tensile strength of a synthetic resin intruded in the pores on the anodic oxidation coating as recited in claim 1 cannot be suggested or taught by Iwasaki. Minoda is overcome by the Declaration, thus the rejection fails.

Further, according to the invention as recited in claim 1, the pores of the anodic oxidation coating can be formed ***irregularly only by a single anodizing treatment***. In contrast, Iwasaki prepares the nanostructure having plural kinds of pores regularly formed by the three or four steps. Making of the nanostructure is very complex and requires high manufacturing costs.

Aluminum material for preparing the work piece 1 in Example 4, quoted in the rejection is deposited by sputtering the Nb film on the surface of the Si substrate as shown in FIG. 6. The aluminum material is not a sheet or plate as used in claim 1 of the present invention, and the structure of the anodic oxidation the work piece 1 is entirely different from that of the anodic oxidation coating of the aluminum plate prepared by the claimed invention.

The nanostructure can be applied to various high—function devices. According to example 6, the plural kinds of the pores were filled with a metal by electrodeposition of Ni metal. Further, according to claims, the filler is a dielectric material having a refractive index different from that of the anodically oxidized aluminum layer (claim 9), a semiconductor (claim

10), a luminescent function (claim 11), a magnetic material (claim 12), and an insulator (claim 17), respectively. Furthermore, according to claims 22-24, the nanostructure is applied to a light emitting device, an optical device, and a magnetic device, respectively.

Thus, Iwasaki discloses or teaches that the pores of anodically oxidized aluminum layer of the nanostructure are filled with various kinds of filler, but ***does not disclose or teach that the surface of the anodically oxidized layer are applied or covered with synthetic resin material.***

In addition, in view of the high function devices as claimed in claims 22-24, the surface of the anodically oxidized layer of the nanostructure serves as a part of the high function devices as it remains in a naked surface without being covered with a synthetic resin so that the uncovered surface of the anodically oxidized layer may be applicable to any desired high function device together in combination with any desired filler filled in the pores. Thus, Iwasaki has no idea that the nanostructure is applied to the component as disclosed in JP' 795.

In conclusion, Iwasaki disclosed in US 2002/0109134 and Minoda disclosed in JP' 795 are entirely independent and different from each other in purpose of the invention, and therefore, any one of ordinary skill in the art has no motivation of incorporating the size of the diameter of pores about 25 nm and 40 nm in Example 2 disclosed in Iwasaki et al. in the invention disclosed in JP' 795. Further the Minoda reference is overcome by the enclosed Declaration.

In this respect, the rejection, saying that claim 1 is obvious over Iwasaki et al. in view of Minoda has no ground.

Again, in light of the comparative results in the Declaration, the verified translation submitted herein, and the remarks above, it is respectfully requested that the rejection be reconsidered and withdrawn.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 04-1105.

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Respectfully submitted,

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Attachment: Inventor's Declaration (9 pages)
Translation of JP2002-302795 & Verification of Translation (13 pages)